

Applicant : Simon Piers Robinson
Serial No.: 10/619,646
Filed : July 11, 2003
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In the claims

Please amend the claims by replacing all prior versions of the claims with the listing of claims below pursuant to 37 C.F.R. §1.121.

1-55. (Cancelled)

56. (Currently Amended) An isolated nucleic acid molecule that encodes a PPO polypeptide of lettuce, tobacco or pineapple wherein said nucleic acid molecule comprises a nucleotide sequence selected from the group consisting of comprising nucleotides in:

- (i) a nucleotide sequence ~~selected from group consisting of: SEQ ID NOS: 9, 11, 13, 15, 17, 19, 25, 27, and set forth in SEQ ID NO: 29;~~
- (ii) a nucleotide sequence that encodes an amino acid sequence ~~selected from the group consisting of: SEQ ID NOS: 10, 12, 14, 16, 18, 20, 26, 28, and set forth in SEQ ID NO: 30;~~
- (iii) a nucleotide sequence that encodes a copper-binding site of an amino acid sequence of (ii); ~~and or~~
- (iv) a nucleotide sequence that is complementary to (i) or (ii) or (iii).

57. (New) The isolated nucleic acid molecule of claim 56, wherein the nucleotides are in:

- (i) a nucleotide sequence set forth in SEQ ID NO: 29;
- (ii) a nucleotide sequence that encodes an amino acid sequence set forth in SEQ ID NO: 30; or
- (iii) a nucleotide sequence that is complementary to (i) or (ii) or (iii).

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58. (New) A recombinant vector comprising a nucleic acid molecule comprising nucleotides in:

- (i) a nucleotide sequence set forth in SEQ ID NO: 29;
- (ii) a nucleotide sequence that encodes an amino acid sequence set forth in SEQ ID NO: 30;
- (iii) a nucleotide sequence that encodes a copper-binding site of an amino acid sequence of (ii); or
- (iv) a nucleotide sequence that is complementary to (i) or (ii) or (iii)

within the vector molecule.

59. (New) The recombinant vector of claim 58 wherein the vector is a plasmid expression vector.

60. (New) The recombinant vector of claim 59 wherein the plasmid expression vector is Bluescript SK+.

61. (New) The recombinant vector of claim 58, wherein the vector is a binary vector suitable for introducing into a plant cell, tissue or organ.

62. (New) The recombinant vector of claim 58, wherein the vector is capable of being replicated and the PPO-encoding nucleic acid is capable of being transcribed and translated in a unicellular organism or in a plant.

63. (New) A transformed plant, plant part, progeny or propagule thereof, comprising a non-endogenous nucleic acid molecule that encodes a PPO polypeptide of lettuce comprising nucleotides in:

- (i) a nucleotide sequence set forth in SEQ ID NO: 29;
- (ii) a nucleotide sequence that encodes an amino acid sequence set forth in SEQ ID NO: 30;

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- (iii) a nucleotide sequence that encodes a copper-binding site of an amino acid sequence of (ii); or
- (iv) a nucleotide sequence that is complementary to (i) or (ii) or (iii).

64. (New) The transformed plant of claim 63, wherein the nucleotides in the nucleic acid molecule are in:

- (i) a nucleotide sequence set forth in SEQ ID NO: 29;
- (ii) a nucleotide sequence that encodes an amino acid sequence set forth in SEQ ID NO: 30; or
- (iii) a nucleotide sequence that is complementary to (i) or (ii) or (iii).

65. (New) The transformed plant, plant part, progeny or propagule thereof of claim 63, wherein the nucleic acid molecule is part of a recombinant vector.

66. (New) The transformed plant, plant part, progeny or propagule thereof of claim 64, wherein the plant is lettuce and the nucleic acid molecule is at least expressed in the lettuce leaf.

67. (New) A process of making the transformed plant, plant part, progeny or propagule thereof of claim 63, comprising introducing into a plant, cell, tissue or organ thereof a nucleic acid molecule encoding a PPO polypeptide of lettuce comprising nucleotides in:

- (i) a nucleotide sequence set forth in SEQ ID NO: 29;
- (ii) a nucleotide sequence that encodes an amino acid sequence set forth in SEQ ID NO: 30;
- (iii) a nucleotide sequence that encodes a copper-binding site of the amino acid sequence of (ii); or
- (iv) a nucleotide sequence that is complementary to (i) or

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(ii) or (iii).

68. (New) A process of making a lettuce plant, cell, tissue or organ thereof, comprising introducing a nucleic acid molecule which hybridizes to a nucleic acid molecule in the lettuce plant, cell, tissue or organ thereof selected from the group consisting of:

- (i) a nucleotide sequence set forth in SEQ ID NO: 29;
- (ii) a nucleotide sequence that encodes an amino acid sequence set forth in SEQ ID NO: 30;
- (iii) a nucleotide sequence that encodes a copper-binding site of the amino acid sequence in (ii); and
- (iv) a nucleotide sequence that is complementary to (i) or (ii) or (iii).

69. (New) The process of claim 68 further comprising expressing the introduced nucleic acid molecule to produce sense or antisense RNA therefrom.

70. (New) The process of claim 68, wherein the nucleic acid molecule is introduced into the plant, cell, tissue or organ thereof by means of Agrobacterium-mediated transformation.

71. (New) The process of claim 69, wherein the nucleic acid molecule is introduced into the plant, cell, tissue or organ thereof by means of Agrobacterium-mediated transformation.

72. (New) The process of claim 68, wherein the nucleic acid molecule is introduced into the plant, cell, tissue or organ thereof by means of microparticle bombardment using a nucleic acid-coated microprojectile.

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73. (New) The process of claim 69, wherein the nucleic acid molecule is introduced into the plant, cell, tissue or organ thereof by means of microparticle bombardment using a nucleic acid-coated microparticle.

74. (New) A method of increasing the level of PPO activity in a plant, cell, tissue or organ thereof, the method comprising:

- (a) introducing into the plant, cell, tissue or organ thereof a nucleic acid molecule encoding a PPO polypeptide of lettuce comprising nucleotides in:
 - (i) a nucleotide sequence set forth in SEQ ID NO: 29;
 - (ii) a nucleotide sequence that encodes an amino acid sequence set forth in SEQ ID NO: 30;
 - (iii) a nucleotide sequence that encodes a copper-binding site of the amino acid sequence of (ii); or
 - (iv) a nucleotide sequence that is complementary to (i) or (ii) or (iii), and
- (b) expressing the nucleic acid molecule to produce an enzymatically-active PPO polypeptide.

75. (New) A method of decreasing the level of PPO activity in a lettuce plant, cell, tissue or organ thereof, the method comprising introducing a nucleic acid molecule which hybridizes to a nucleic acid molecule in the lettuce plant, cell, tissue or organ thereof, comprising nucleotides in:

- (i) a nucleotide sequence set forth in SEQ ID NO: 29;
- (ii) a nucleotide sequence that encodes an amino acid sequence set forth in SEQ ID NO: 30;
- (iii) a nucleotide sequence that encodes a copper-binding site of the amino acid sequence in (ii); or
- (iv) a nucleotide sequence that is complementary to (i) or (ii) or (iii).